Remarks

Section 112 Rejections

The rejections of claims 3, 9, 29 and 30 on section 112 second paragraph have been cured by the amendment of these claims along the lines indicated in the rejection.

Section 103 Rejections

The Examiner rejected claims 1-33 under section 103(a) as being unpatentable over Kawamura, et al. 5778388, in view of Mosher, et al. 6785696. The Examiner cited Kawamura all of the elements of claim 1, for example, except for including a REDO point in checkpoint information for which Mosher was cited (col. 8, lines 66-67 and 1-3).

Neither cited reference teaches a method of processing using a backup system lock.

Each of applicants' independent claims 1, 9, 17, and 26 involve the use of a backup system lock and describe how the system acts when the backup system lock is taken. It is respectfully submitted that neither cited reference teaches the use of a backup system lock or the claimed specific actions executed while the backup lock is taken. Claim 17 will be used as the exemplary claim, but the arguments apply to each of the independent claims. Claim 17 includes the step of:

> continuing to update the data while the backup system lock is taken, except for suspending actions that change an external file system catalog, and except for suspending writing updates of objects that extend across a storage volume boundary.

Thus, the claim clearly includes the use of a backup system lock and describes specific actions taken while the backup system lock is taken.

The Examiner specifically referenced Kawamura col. 9, lines 33-35 and col. 9, lines 52-56 for the last step of the method of claim 17 cited above. The entire paragraph encompassing col. 9, lines 33-35 is:

> Since the pages to be written in the database at the syncpoint are confirmed, the buffer pool is immediately unlocked (step 256). While the buffer pool is in the locked state, any input and output operations are inhibited for the external storages. This consequently leads to a short lock period of time in which only the CPU processing is executed. Thanks to this provision, the processing of transactions awaiting the unlocking of the buffer pool can be continuously executed. According to the output page control table list thus produced, for the pages to be written in the database at the syncpoint, a write request is issued to the deferred write processing part 25, thereby initiating the operation to write the pages in the database (step 257).

Kawamura col. 9, lines 52-56 are:

> Consequetly [sic], when such a write operation is achieved for another transaction, the counter 381 is decremented in response thereto such that synchronization is required to be established in operation until the value becomes zero.

Therefore, it is clear that that the cited sections of Kawamura are not describing processing during a backup operation of any kind and, moreover, they do not describe the specific processing that occurs when a backup system lock is taken as applicants claim. The word "backup" does not even appear in searchable text of the patent.

It is respectfully submitted that the Examiner has erroneously interpreted the general "locks" described in Kawamura as being backup system locks. For example, the Examiner cited to Kawamura col. 9, lines 7-9 as teaching a backup system lock. The cited section is:

> When the lock is reserved for the buffer pool, accesses to the buffer pool due to transactions are temporarily maintained in the wait state until the locked state is released.

Buffer pool locks are not backup system locks and, moreover, Kawamura does not teach using the buffer pool locks to trigger the same set of actions that applicants claim. Regardless of the name applied to the lock, the actions claimed by the applicants are different from the actions taught by Kawamura.

The Examiner relied on the Mosher reference for including a REDO point in checkpoint information for which Mosher col. 8, lines 66-67 and 1-3 was cited. Therefore, the Examiner did not rely on Mosher to supply to missing teaching on processing during backup system locks. Mosher is non-analogous art to Kawamura, since Mosher deals with a method and system for backing up primary nodes onto backup nodes where the primary nodes can each originate a distributed transaction and can participate in a distributed transaction. (See Abstract). Mosher cannot be reasonably combined with Kawamura, since they are dealing with different subject matter.

Neither Mosher nor Kawamura teach the use of backup system lock nor the specific actions of suspending actions that change an external file system catalog, and suspending writing updates of objects that extend across a storage volume boundary during the backup system lock.

Neither references teaches Applicants' claim 17 includes "freezing a REDO log point in checkpoint information while a backup system lock is taken."

Applicants' claim 17 includes "freezing a REDO log point in checkpoint information while a backup system lock is taken." Other independent claims have similar language. The Examiner cited Mosher col. 8, lines 66-67 and 1-3 for REDO log points. Neither Mosher not Kawamura teach freezing the REDO log when a backup system lock is taken as claimed. Moreover, the claimed action is not to the general use of a REDO log point, but rather to specifically freezing the REDO log point while a backup lock is taken in the context of the other elements of the claim.

The Examiner's cited section of Kawamura does not support the interpretation that Kawamura teaches storing log records and data records on separate volumes.

The Examiner specifically referenced Kawamura col. 5, lines 38-41 for the step of storing log records and data records on separate volumes. The referenced lines are:

> The external storages 16 are used to respectively store therein databases 36a and 36b controlled by the database management system 20 and a log file 37 to store therein information of updated history related to database update operations.

Applicants respectfully submit that the Examiner has erroneously referenced this section, since it does not teach "storing data on a first set of storage volumes and storing log records on a second set of storage volumes" as claimed in claim 17 or the other independent claims.

The Examiner's rejections of the dependent claims are believed to be overcome by the arguments above for the independent claims. None of the

Examiner's citations for the dependent claims supply the missing teachings cited above.

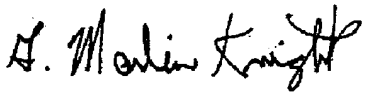
Conclusions

Applicants' claims are directed at a specific way of taking a backup of a database using a particular storage arrangement and allowing particular actions to continue during the backup. Applicants respectfully submit that the references singly and when combined fail to teach claimed elements of applicants' method or the related elements in the other independent claims.

Claim 17 has been used as the exemplary claim, but each of the independent claims have comparable language and, therefore, distinguish over the references on the same basis. Each independent claim references a "backup system lock" and specific actions taken in relation thereto that distinguish over the prior art.

Applicants, therefore, believe that all of the claims in application are allowable.

Respectfully submitted,



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